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10/529,652	03/31/2005	Masaru Fuse	2005-0563A	1601

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EXAMINER	
DOBSON, DANIEL G	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,652	FUSE, MASARU	
	Examiner	**Art Unit**	
	DANIEL G. DOBSON	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 16 December 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-45 is/are pending in the application.

4a) Of the above claim(s) 2-15,19-39,43 and 44 is/are withdrawn from consideration.

5)☒ Claim(s) 1,18 and 42 is/are allowed.

6)☒ Claim(s) 16,17,40,41, and 45 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 12/16/2008, with respect to the *Forestieri* reference have been fully considered and are persuasive. However, to the extent Applicant's arguments apply to the *Miyauchi* reference, the examiner respectfully disagrees. *Miyauchi* discloses compressing optical pulses via wavelength chirp and wavelength dispersion (Col. 5, ll. 40-45.)

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 16 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,779,266 to Chung et al., U.S. Patent 7,187,715 B2 to Balachandran et al. and U.S. Patent 6,823,141 B2 to Miyauchi et al.

As to **Claim 16**, *Chung* discloses an optical transmission system for optically transmitting one data signal (Fig. 1), comprising:

a pulse train generating portion (Fig. 5) for converting the one data signal (1011) to a pulse train (output of gate 1213)), the one data signal being converted based on an encoding pattern that is uniquely predetermined corresponding to the one data signal (code in register 1212), and outputting the pulse train;

an optical modulating portion (1214) for converting the one pulse train output from the pulse train generating portion to an optically intensity modulated signal and outputting the signal (Fig. 1, S1);

an optical transmission path for transmitting the optically intensity modulated signal that is output from the optical modulating means (Fig. 1, 141);

data signal extracting portion (Fig. 6, 1312-1315) for obtaining the pulse train from the electrical signal that is output from the optical detecting portion, the short pulse train being obtained based on a decoding patter that uniquely corresponds to the encoding patter and extracting the data signal (Claim 4, a unique code is associated with each stream.)

Chung does not expressly disclose that the data is converted into a short pulse train, that the pulse train is outputted as an ultra wide band transmission, or a wavelength dispersing portion.

Balachandran discloses an ultra wide band transmission system (Fig. 1.) An encoder (Fig. 1, 110) converts each bit of the input data stream to a chip or short pulse train (Col. 5, ll. 5-11.) Each channel is assigned a code sequence.

The signals are then sent over the transmission medium which may be optical fiber (Col. 5, l. 30.) At the receiver, the signals (chips or short pulse trains) are decoded based on their respective decoding patterns (Col. 5, ll. 32-8.)

Miyauchi discloses the optical transmission system further comprises a wavelength dispersing portion (Fig. 2, 7), that has wavelength dispersion characteristics (the dispersion characteristics are selected to offset dispersion of the transmission system) and receives the optically intensity modulated signal transmitted on the optical transmission path (2), compresses a pulse width of the pulse train (Col. 5, ll. 45-6), which is modulation information, or reducing a rising time and/or a falling time of the pulse train by using an interaction between a wavelength chirp and a wavelength dispersion (Col. 5, ll. 40-45.), and for outputting a result as an optical signal,

an optical detecting portion (8) for converting an optical signal output from the wavelength dispersing portion to an electrical signal and outputting the electrical signal.

Chung, *Balachandran*, and *Miyauchi* are from the same art with respect to optical communications, and therefore are analogous art.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to use a wavelength dispersing portion before an optical receiver. The suggestion/motivation would have been to compensate for the dispersion effects of the transmission path (Col. 3, ll. 23-4.) It would have also been obvious to use UWB transmission (*Balachandran*) in the system disclosed by *Chung*. *Balachandran* suggests the technology is suitable for optical transmission. Furthermore and a person of ordinary skill in the art would be motivated to take

advantage of the benefits associated with UWB, such as low power consumption and the elimination of RF components in the transmitters and receivers.

As to **Claim 45**, *Chung* discloses a receiver (Fig. 1, receiver side) apparatus for receiving an optically intensity modulated signal (Col 1, ll. 60-4) that has been modulated with a pulse train obtained by converging at least one data signal, based on at least one encoding pattern that is uniquely predetermined corresponding to the at least one data signal (each signal has its own orthogonal code), via an optical transmission path (Fig. 1, 141), comprising:

an optical detecting portion (Fig. 6, photodiodes (P-D's)) for converting the optical signal to an electrical signal and outputting the electrical signal (the signals are passed to the decoder); and

data signal extracting portion (1315) for obtaining the pulse trains from the electrical signals that are output from the optical detecting portion based on a decoding pattern that uniquely corresponds to the encoding patterns and extracting the at least one data signal from the pulse train (Col. 4, ll. 61-3.)

Chung does not expressly disclose that the data is converted into a short pulse train, that the pulse train is outputted as an ultra wide band transmission, or a wavelength dispersing portion.

Balachandran discloses an ultra wide band transmission system (Fig. 1.) An encoder (Fig. 1, 110) converts each bit of the input data

stream to a chip or short pulse train (Col. 5, ll. 5-11.) Each channel is assigned a code sequence.

The signals are then sent over the transmission medium which may be optical fiber (Col. 5, l. 30.) At the receiver, the signals (chips or short pulse trains) are decoded based on their respective decoding patterns (Col. 5, ll. 32-8.)

Miyauchi discloses the optical transmission system further comprises a wavelength dispersing portion (Fig. 2, 7), that has wavelength dispersion characteristics (the dispersion characteristics are selected to offset dispersion of the transmission system) and receives the optically intensity modulated signal transmitted on the optical transmission path (2), compresses a pulse width of the pulse train (Col. 5, ll. 45-6), which is modulation information, or reducing a rising time and/or a falling time of the pulse train by using an interaction between a wavelength chirp and a wavelength dispersion (Col. 5, ll. 40-45.), and for outputting a result as an optical signal,

an optical detecting portion (8) for converting an optical signal output from the wavelength dispersing portion to an electrical signal and outputting the electrical signal.

Chung, *Balachandran*, and *Miyauchi* are from the same art with respect to optical communications, and therefore are analogous art.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to use a wavelength dispersing portion before an

optical receiver. The suggestion/motivation would have been to compensate for the dispersion effects of the transmission path (Col. 3, ll. 23-4.) It would have also been obvious to use UWB transmission (*Balachandran*) in the system disclosed by *Chung*. *Balachandran* suggests the technology is suitable for optical transmission. Furthermore and a person of ordinary skill in the art would be motivated to take advantage of the benefits associated with UWB, such as low power consumption and the elimination of RF components in the transmitters and receivers.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,779,266 to Chung et al., U.S. Patent 7,187,715 B2 to Balachandran et al., and U.S. Patent 6,823,141 B2 to Miyauchi et al., as applied to claim 16 above, and further in view of U.S. Patent 5,315,426 to Aoki

As to **Claim 17**, *Aoki* discloses wherein the optical modulating portion uses a directly optical modulation scheme in which a current injected to a semiconductor laser is modulated with an input pulse train to output an optically intensity modulated signal (Col. 1, ll. 10-26.)

Aoki is from the same art with respect to optical communications, and therefore is analogous art.

At the time of the invention, a person of ordinary skill in the art could have used direct modulation of a semiconductor laser to produce an intensity modulated signal with know methods and predictable results.

Therefore, it would have been obvious to directly modulate a semiconductor laser with coded pulse streams disclosed by *Chung*.

As discussed above, *Balachandran* discloses an UWB transmission system and generating short pulse trains for transmission in an optical system, thus these elements would have been obvious at the time of the invention.

5. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0026199 A1 to Myers, U.S. Patent 4,779,266 to Chung et al., and U.S. Patent 7,187,715 B2 to Balachandran et al.

As to **Claim 40**, *Myers* discloses an optical transmission system (Fig. 1) for optically transmitting at least two data signals (Fig. 1, signals S1-SN), the optical transmission system comprising:

a plurality of pulse train generating portions for converting each data signal to a respective short pulse train in a predetermined modulation format (Fig. 1, 16a-16c, ¶ 36, the data signals are converted to pulses which are positive or negative according to a modulation format,) each data signal being converted based on a respective encoding pattern uniquely predetermined to correspond to a respective data signal (Fig. 1, 34a- 34c and 36a-36c, ¶¶ 36 and 46, filters impart an orthogonal code (unique) to each of the pulse trains);

a synthesizing portion for outputting an electrical signal obtained by synthesizing a plurality of the short pulse trains output from the plurality of filter portions (Fig. 1, combiners 40 and 42);

the optical modulating portion for converting the electrical signal output from the synthesizing portion to an optically intensity modulated signal and for outputting the optically intensity modulated signal (Fig. 1, electrical signal from the combiners are passed to the amplitude modulators (56a and 56b) for converting the electrical signals to an optical signal);

an optical transmission path for transmitting the optically intensity modulated signal output from the optical modulating portion (Fig. 1, 72);

a data signal extracting portion (Fig. 3, decoders (112 a-c and 114 a-c) for obtaining the pulse trains from the electrical signal output from the optical detecting portion (Fig. 3, data out (124 a-c) is recovered from the extracting portion), the pulse trains being obtained based on decoding patterns that uniquely correspond to the respective encoding patters (¶¶ 50 and 51, each decoder receives all the signals, but only provides an output for the signal it has the code for) and for extracting the data signals from the pulse trains (¶ 51, integrators (120a-c and 122a-c) recover the data signals from the pulse trains.)

Myers does not expressly disclose that the data is converted into a short pulse train, that the pulse train is outputted as an ultra wide band transmission, or a wavelength dispersing portion.

Balachandran discloses an ultra wide band transmission system (Fig. 1.) An encoder (Fig. 1, 110) converts each bit of the input data

stream to a chip or short pulse train (Col. 5, ll. 5-11.) Each channel is assigned a code sequence.

The signals are then sent over the transmission medium which may be optical fiber (Col. 5, l. 30.) At the receiver, the signals (chips or short pulse trains) are decoded based on their respective decoding patterns (Col. 5, ll. 32-8.)

Miyauchi discloses the optical transmission system further comprises a wavelength dispersing portion (Fig. 2, 7), that has wavelength dispersion characteristics (the dispersion characteristics are selected to offset dispersion of the transmission system) and receives the optically intensity modulated signal transmitted on the optical transmission path (2), compresses a pulse width of the pulse train (Col. 5, ll. 45-6), which is modulation information, or reducing a rising time and/or a falling time of the pulse train by using an interaction between a wavelength chirp and a wavelength dispersion (Col. 5, ll. 40-45.), and for outputting a result as an optical signal,

an optical detecting portion (8) for converting an optical signal output from the wavelength dispersing portion to an electrical signal and outputting the electrical signal.

Myers, *Balachandran*, and *Miyauchi* are from the same art with respect to optical communications, and therefore are analogous art.

At the time of the invention it would have been obvious for a person of ordinary skill in the art to use a wavelength dispersing portion before an

optical receiver. The suggestion/motivation would have been to compensate for the dispersion effects of the transmission path (Col. 3, ll. 23-4.) It would have also been obvious to use UWB transmission (*Balachandran*) in the system disclosed by *Myers*. *Balachandran* suggests the technology is suitable for optical transmission. Furthermore and a person of ordinary skill in the art would be motivated to take advantage of the benefits associated with UWB, such as low power consumption and the elimination of RF components in the transmitters and receivers.

6. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2003/0026199 A1 to Myers, U.S. Patent 4,779,266 to Chung et al., and U.S. Patent 7,187,715 B2 to Balachandran et al., as applied to claim 40 above, and further in view of U.S. Patent 5,315,426 to Aoki.

As to **Claim 41,** *Aoki* discloses wherein the optical modulating portion uses a directly optical modulation scheme in which a current injected to a semiconductor laser is modulated with an input pulse train to output an optically intensity modulated signal (Col. 1, ll. 10-26.)

Aoki is from the same art with respect to optical communications, and therefore is analogous art.

At the time of the invention, a person of ordinary skill in the art could have used direct modulation of a semiconductor laser to produce an intensity modulated signal with know methods and predictable results.

Therefore, it would have been obvious to directly modulate a semiconductor laser with coded pulse streams disclosed by *Chung*.

As discussed above, *Balachandran* discloses an UWB transmission system and generating short pulse trains for transmission in an optical system, thus these elements would have been obvious at the time of the invention.

Allowable Subject Matter

7. Claims 1, 18, and 42 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. DOBSON whose telephone number is (571)272-9781. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel G. Dobson/
Examiner, Art Unit 2613
02/26/2008

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613